COMBINED MUTUAL AID ANALYSIS

National Fire Coordination Study

U.S. DEPARTMENT OF AGRICULTURE/FOREST SERVICE/DIVISION OF FIRE CONTROL

COMBINED MUTUAL AID ANALYSIS

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A Synthesis and Analysis of Mutual Aid and Command Situation Studies Made of:

1. Oregon, with emphasis on the Portland area.
2. Michigan, with emphasis on the Detroit area.
3. Massachusetts, plus tie-in with neighboring states.
4. Washington, D. C. Metropolitan area.
5. California, with emphasis on Los Angeles area.

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INTRODUCTION

Effective July 1, 1964 the Forest Service began a National Fire Coordination Study for the Office of Civil Defense, Office of the Secretary of the Army. The purpose of the study is to recommend how existing Federal, state, local, and private fire forces can be most effectively joined to cope with fires which might result from a nuclear or similar disaster. Ability to effectively cope with fires resulting from such a disaster could be closely related to the ability of the United States to survive as a Nation.

Very little information is available about how the fire services work together during emergencies, how they plan and execute mutual aid, how they assign command, what their strong characteristics are, and what their problems are. We reasoned that before attempting to recommend how to most effectively join these services to cope with nuclear attack fires, we should first know something about their existing operations. So, to obtain a sample, we studied mutual aid and command situations in these areas.

Oregon, with emphasis on the Portland area.

Michigan, with emphasis on the Detroit area.

Massachusetts, plus tie-in with neighboring states.

Washington, D. C. metropolitan area.

California, with emphasis on the Los

Individual reports for each area are available in the National Fire Coordination Study files.

The objectives of each mutual aid and command situations study were to:

1. Identify, describe, and explain the working of the mutual aid and command systems in one state to include: (1) Local level to state level system, (2) arrangements between Federal, local, state, and private fire services, (3) representatives intra-organization systems, police, etc. and workings, and (4) arrangements between the interlstate pacts, if any.
2. Develop a list of suggestions from informed people about how to improve existing mutual aid and command systems.
3. Identify, describe, and explain the workings of especially successful mutual aid and command arrangements.
4. Identify the most promising problems and opportunities pertinent to mutual aid and command for improving, adapting, or solving to ultimately achieve a nationally coordinated system.
5. Identify any additional factors that will contribute to achieving the objectives of the National Fire Coordination Study.

Recommendations were extracted from each of the five mutual aid and command situation study reports. These are summarized by subjects in Exhibits A, B, C, D, E, F, G, in the Appendix. Exhibit H in the Appendix is a list of conclusions extracted from the fire studies.

THE PROBLEM

The first phase of the National Fire Coordination Study is the preparation of an analytical report. Among other things, this report will recommend feasible alternative courses of action for the OCD fire program and make impact and cost-effectiveness analysis for each alternative.

Recommending alternative courses of action for the OCD fire program requires synthesis and analysis of pertinent available data including:

1. Findings of pertinent research.
2. Conclusions and recommendations from mutual aid and command situation studies.
3. Conclusions and recommendations from the study of large fires.
4. Findings from the review of pertinent literature.
5. Effects of possible nuclear attack on fire resources.
6. Ideas and suggestions developed at the fire service briefing meetings.

This paper is concerned with Item 2. The problem is to summarize, analyze, and interpret the conclusions and recommendations in the five mutual aid and command studies so they can be used to develop alternative courses of action for the OCD fire program.

OBJECTIVES

The objectives of this paper are to:

1. Summarize and arrange the recommendations and conclusions of the five studies so they can be effectively used in the National Fire Coordination Study.
2. Analyze the five studies and from this analysis develop conclusions which are pertinent to the National Fire Coordination Study.
3. Make recommendations, based on the above conclusions, that can be used effectively to develop alternative courses of action for the OCD fire program.

ANALYSIS

Findings of the five mutual aid studies are summarized in Figure 1. These findings are grouped under 11 subjects and a comparison can be made between each study area. Analysis of the conclusions in each of the five reports suggests the most promising areas for improvement or adapting to a system capable of handling nuclear attack fire disasters to be in these subjects.

A. Organization, coordination, mutual aid and command.

B. Effective communications.

C. Pre-emergency fire suppression planning and prevention.

D. Fire equipment and tactics.

E. Protection of command and communication centers.

F. Training

G. General

These are discussed later in this analysis.

FIGURE 1

SUMMARY OF FINDINGS

ELEMENTS	MUTUAL-AID STUDY AREAS				
	Portland	Michigan	Massachusetts	Washington D.C.	L.A.
Pre-emergency plans					
are prepared by	Fire Serv.	C.D.	Fire Serv.	C.D.	Fire Serv.
are approved by local government	Not yet	No	Yes	Some	Yes
are approved by fire service	Not Yet	No	Yes	Some	Yes
are for severe emergency	Yes	Some	Some	Some	Some
defines levels of emergency	No	No	No	No	No
contains activation "trigger"	No	declared emergency	No	No	Chief's judgment
names the commander	No	Yes	No	No	Yes
names the staff	No	Yes	No	No	Yes
includes job descriptions	No	No	No	No	Yes, incomplete
includes priority guides	No	No	No	a few	No
includes fuel classification	No	No	No	No	No
includes shelter protection	No		No	No	No
includes pre-selected assignments	No	No	No	No	No
includes forest fire services	Yes	Partial	Partial	Partial	Partial
clearly define the authority and responsibility of all participants	No	No	No	No	No
vary widely within the area	Not in the proposed plan	No-State	Yes	Yes	No
Mutual-Aid Arrangements					
are in effect	Yes	Yes	Yes	Yes	Yes
are formal or informal	Both	Informal	Both	Both	Formal
need simpligying	Yes	Yes	Yes	Yes	Yes
consist of several agreements	Yes	Yes	Yes	Yes	Yes
are in one joint pact	Proposed	No	No	No	No
include reimbursement	Yes	Not clear		No	Yes
include liability		No			Some
need legislation	Yes		Yes	No	Yes
Fire Services Personnel					
are all paid %	Partial	50%	Partial	Partial	99%
chiefs are all paid	Partial	No	No	No	Yes
has reserve of command-trained affairs	No	Slight	No	Some	Yes
Dispatch and Locator System					
is adequate for normal	Yes	Barely	Barely	Yes	Yes
is designed for extreme	Proposes	No	No	Partial	Best
is hardened	Proposed	-	No	Partial	Partial
requires skilled dispatchers	Yes	Yes	Yes	Some do	Some do
Command					
is defined for "normal" fires	Yes	Yes	Yes	Yes	Yes
is defined for extreme emergency	No	State Law	No	No	Yes
changes with severity	Yes	Yes	Yes	Yes	No
goes to non-fire people	Yes	Yes	Yes	Yes	No
transition is provided	No	Yes	No	Not easy	Yes
Coordination					
is defined and understood	Some	Some	Some	Partial	Yes
is by Civil Defense	No	Some	Some	Some	Both
is by fire service	Some	Some	Some	Some	Both
transition "trigger" is defined	No	Declared emergency	No	No	Partly

ELEMENTS	MUTUAL-AID STUDY AREAS				
	Portland	Michigan	Massachusetts	Washington D.C.	L.A.
Emergency Operating Center					
is available	Yes		No	Some	Yes
is hardened	Yes		No	Some	Yes
is staffed continuously	No		No	One is	Yes
is in daily use by fire service	No		No	One is	Yes
Training					
is joint	No	No	No	No	Some
is current	Some	Some	Some	Yes	Yes
is comprehensive	No	No	No	No	Yes
includes tactics	Yes	Yes	Yes	Yes	Yes
includes command	No	Some	No	No	Yes
includes shelter protection	No	No	No	No	No
includes evacuation	No	No	No	No	No
includes police	Some	No	No	No	Some
includes natural fuels	No	No	No	No	Yes
is done by	Fire Serv.	Univ.	Fire Serv.	Fire Serv. & Ext.	Fire Serv.
varies widely within area	Yes	Yes	Yes	No	No
facilities are adequate for training	No	No	No	No	yes
Communications					
is adequate for "normal"	No	No	No	Yes	Yes
is adequate for greater emergency	No	No	No	No	No
includes several frequencies		No	Yes	Yes	Yes
includes a mutual aid frequency	No	No	No	Yes	Yes
includes a portable headquarters	No	No	No	No	Yes
Equipment and Supplies					
inventory maintained of fire equipment	No	No	Yes	Yes	Yes
inventory maintained of private equipment	Some	No		No	Some
adequate for "normal"	Barely	Yes ?	Barely	Yes	Yes
Other Problem Elements					
has legal problems in M-A	Yes	Yes	Yes	Minor	Minor
has reimbursement problems	Yes		Yes	No	No
has communication problem now	Yes	Yes	Yes	No	No
volunteer chiefs are a problem in command			Yes	Yes	No
autonomy is a problem in command	Yes		Yes	Yes	No
natural fuels are critical - % of days - estimate	8%	11%	8%	4%	28%

Organization, Coordination, Mutual Aid and Command:

These functions are closely related. When one thinks of operational effectiveness it becomes obvious that they must be treated together. Fire mutual aid arrangements around the country - many are not in writing - are generally aimed to cope with disasters of the magnitude that have been experienced in the past. Very few are arranged to cope with fire disaster such as would accompany a nuclear attack. . Moreover, many local fire chiefs are confident that they can effectively suppress any fires that might occur in their area, even in a nuclear attack situation. These habits and attitudes suggest that realistic localized training of key fire service personnel is necessary before the fire services will actively support the type of pre-emergency arrangements necessary to cope with nuclear attack fires. They must understand and believe the problem first. This training should concern itself with real local problem areas. I. e., an attack model showing what can realistically be expected to happen to a given target area. Simulation to make this realistic will help. People who will face the problem together should train together. I. e., fire services, police, health, CD coordinators, others.

Misunderstanding between the fire services, and local Civil Defense coordinators - this varies from outright resentment to passive acceptance on the part of the fire services - exists in many areas. Of the areas studied, California and the Washington, D. C. metropolitan area are the most notable exceptions. This misunderstanding seems to come mostly from; (1) lack of clear understanding of the role each should play in an emergency, (2) resentment and fear by the fire services of accepting command from non-fire professionals, and (3) tendency of some CD officials to assume a command role when a coordinator role might be more appropriate. The Civil Defense act identifies the chain of command for surmounting disasters thusly; President of the United States - Governor of the state - local subdivisions. Thus, the responsibility for strategic command rests with our elected officials. The analyst believes this to be necessary, desirable, and American. The problem then is to decide tactical command. Who is in charge, under what conditions, and how does he get in charge? Many local fire officials do not understand these fundamentals, particularly the mandates set forth in the Civil Defense act. This point should be brought out clearly in pre-emergency planning and training.

If a nuclear disaster, or series of nuclear disasters, ever strikes the United States it seems obvious that someone will have to be in over-all command of each problem area. Surely these problem areas will not follow jurisdictional boundaries. A problem area might cover several

jurisdictional areas. The commander of such a disaster will be a strategic commander assigned to a specific problem area. He may or may not be a fire specialist, a police officer, a political appointee, er. He must be capable of assessing the disaster situation and deciding how the several services - fire, police, health, transportation, other - are to be committed. Thus, our command problem is two old. First, we must assign a strategic commander for the overall disaster. Secondly, we must decide how the tactical fire command is to be arranged.

Assigning the strategic commander to the disaster problem is a job for the governor of the state and his immediate staff. A page from the Forest Service Policy of assigning the most capable man as fire boss on large fires can be adapted here. OCD can help the state governors execute this responsibility by preparing qualifications, standards, and job descriptions for these strategic problem area commanders. These standards and descriptions are beyond the scope of the fire study. They are germaine to the whole job of managing a disaster problem. The analyst believes that it would be much better to train and maintain a cadre of strategic problem area commanders who are ready to command a problem when and where it occurs than to attempt to pre-assign such commanders on the basis of jurisdictional boundaries or zones.

Our second command problem, the assignment of tactical fire command, relates more to day-to-day operations of the fire services. The almost universal practice of fire chiefs assuming command of all emergencies in his jurisdiction is logical and operable. This practice assures continuance of the fire service's present strong capabilities to take initial action in the absence of communication from higher authority - an important and necessary capability if we are to recover from a nuclear attack.

Arranging fire service mutual aid on the basis of the worst fire emergencies likely to be experienced under normal conditions seems quite logical to the analyst. This assumes that this is well done. Our studies show that this is not always so. Such arrangements should be the responsibility of the fire services and their local government bodies. Local Civil Defense coordinators can and should help arrange this. These arrangements should be activated from "the bottom up". I. e.: the request for aid originates with the unit fighting the fire and goes through the channels the pre-emergency plan may prescribe until the request is filled. This is characteristic of most mutual aid agreements examined in the five studies. When planning this tactical mutual aid it is important to arrange for effective control of all predictable fire emergencies to the level of difficulty where the governor would assign a strategic problem area commander. Tactical pre-emergency plans should contain the formal agreements necessary to cover this area thoroughly. Our study suggests that the most effective arrangements are those that permit commitment of fire capability over a broad area--county or larger--and simplify or eliminate repayment and insurance coverage.

Assignment of a strategic commander to a problem area by the governor will certainly not ease the apprehension and fear of the fire services. This natural fear might even be greater, especially so, if the commander was not a professional fire man. The analyst believes that qualified liaison from each involved public service agency should be present on each problem area commander's staff. His decisions then would be group decisions involving all of the services. Some successful precedent for for this exists. See: (1) The report of the Nevada Fires by James W. Jay, and (2) Office of Civil Defense's concept of Emergency Operating Centers.

In some areas the fire services are isolated from communication and contact with Civil Defense policies. Some state Civil Defense fire plans are drafted without involving the fire services. Thus, they exist in name only, and do not have commitment and support from people who will fight the fires. Our studies suggest that many fire chiefs and Civil Defense officials are aware of this situation and are eager to do something about it. The problem is what to do.

Several elements in the studies suggest that one reason for the fire service isolation is that they lack effective professional staff leadership at the local, state, and national level. This situation might be improved by creating a staff chain of communication and service from the local level to the national level. The analyst believes that it is a fire service - not OCD - responsibility to work this out. OCD might provide guidance, or even be the catalyst, to get started.

Communications: Most fire services agree that effective organization, coordination, mutual aid and command is dependent upon communications. Three of the fire areas studied had communication nets adequate for normal fire expectancy. None had networks adequate for a fire emergency greater than the normal expectancy. (See Figure 1) All five studies suggest two basic communications needs, these are; (1) an effective, separate operational network or networks for each public service, and (2) an effective coordination net for use by coordinators and strategic problem area commanders to coordinate the efforts of the several activities engaged in a disaster. The communications problem suggests special study! Designing an adequate operational radio net for the fire services alone is a monumental task involving complex frequencies and many local problems. Designing an effective disaster coordinating net is also complex. Joining these for effective operations further complicates the task.

We can be quite certain that communications chaos will reign for a time following a nuclear attack. This will likely be the case, even with a much improved system. Thus, local pre-emergency planning should include instructions for fire defense units to implement prior to establishing communications with strategic disaster commanders.

Pre-Emergency Fire Suppression Planning and Prevention: Our analysis thus far has dealt with organization, coordination, mutual aid and command and communication. We have dealt with the problem of organizing from the "top down" to handle a disaster involving several jurisdictions, and we analyzed the tactical role of the fire services both in the big disaster and in the more typical disaster before the governor will declare an emergency.

Our studies suggest that the most effective fire services do the best job of pre-emergency planning and prevention. Surely such plans will strengthen the ability of the fire services to move into a nuclear fire disaster effectively or to respond to the strategic decisions of a disaster commander.

None of the five areas have pre-emergency plans that contain the following elements:

1. Definition of levels of emergency
2. An activation "trigger" for easy transition to disaster conditions.

   In Los Angeles the Chief's judgment is the trigger.

   In Michigan the governor's proclamation puts a disaster law in effect.
3. Name or title of the disaster fire commander or his staff.
4. Job description for commander and staff. (L. A. has incomplete descriptions)
5. Fire protection priority guides.

6. Fire hazard (fuel) classification.

7. Shelter protection

8. Pre-selected assignment for the fire services

9. Clear definition of authority and responsibility for all participants.

Emergency operating centers are hardened, staffed, and are used around the clock by the fire services in the two areas studied, and only here are they considered worthwhile.

None of the dispatch and locator systems are designed for, nor can be readily expanded to handle disaster situations.

Fire defense plans are often prepared by either the fire services or Civil Defense. Rarely are they prepared jointly, (See figure 1).

Pre-emergency plans are not always approved by the fire service or by the local government. This raises questions of operation and legality.

There is a wide variation in the form and content of pre-emergency plans, even in critical elements such as mutual aid and command.

The large number of informal unwritten mutual aid arrangements can cause problems in operation, legality, and liability.

A joint pact that is signed by several fire services has many advantages over several individual 2-party agreements.

Legislation is needed in at least three of the study areas, to enable the use of mutual aid agreements. Inter-state pacts must be reviewed by the United States Congress.

The large number of volunteer unpaid firemen and chiefs in some areas is a real problem to the development of a command-trained fire service.

Three areas have no identifiable reserve of command-trained officers. Coordination of forces from different services and agencies is well understood and practiced in only one of the areas studied. In the Los Angeles area, a coordination headquarters is set up as soon as more than one service is involved in a fire emergency. It is staffed with personnel from each service, and from Civil Defense when a disaster occurs. Through practice, these people are able to join in common decisions.

These foregoing facts suggest that pre-emergency plans vary in scope--and they probably should--but many do not contain the essential elements to make them work most effectively. There are likely several common elements that should be in all plans. Several of the individual study reports suggest this. The National Fire Coordination Study might study this problem and identify those elements that should be common to all plans.

The foregoing facts also serve to dramatize the importance of Civil Defense and the fire services planning together, training together, and thereby probing the way for effective working relationships. This must include the principle of simplifying pacts, plans, and operations so they are truly useable in the emergency.

Dispatch and locator systems are generally inadequate. This suggests a special development project beyond the scope of the National Fire Coordination Study. The principle of assigning a disaster commander to a problem area suggests that mobile or protable units would be valuable.

The unstable service of volunteer unpaid firemen is posed as an obstacle to effective emergency operations. This might not be the case if the principle of assigning a trained disaster commander to problem areas is followed.

Several recommendations - see Exhibit C, Appendix - suggest that pre-emergency plans should include ignition point reduction, zoning, and construction planning for fire prevention, and treatment of rural fuels where they are adjacent to urban areas.

Equipment and Tactics

Many fire services express the need for more equipment. The analysts get the impression that much local effort is spent in raising funds for new equipment.

In actual practice, equipment regularly goes to fires only 25% manned. That is, a truck or engine company requiring 10 to 12 men, will arrive with only 2 or 3. Other volunteers report directly to the fire, when they can. The studies were not in sufficient depth to compare effectiveness of those lightly-manned, volunteer companies with fully-manned companies. But the question is raised. Can good tactical application be made with equipment if it is not fully-manned? Is it a safe operation?

All municipal fire equipment is expensive. No opinion is expressed as to how much of the cost is in essentials - pumpers, ladders, chemicals, chassis - and how much is in extras and trim. Generally it is not considered obsolete until 20 years old.

Analysts were impressed with the quality of equipment maintenance and the pride shown therein.

Several fire services expressed the need for guidance in the procurement of equipment and in determining equipment needs. This would be in the form of purchase descriptions and specifications.

There is a wide variation in amount of equipment per unit of population. Generally there is more in rural areas than in cities. The industrial and NFPA guides for equipment levels, were not checked.

Protection of command and communications centers. Emergency operating centers, to be effective must meet the following criteria.

a. They are protected from blast and fall-out.

b. They are in daily, round-the-clock use by the fire service and police, for normal operations. Thus, staffed with skilled dispatchers, they can be readily expanded for disaster conditions to the facility limitations.

There are examples of well planned E. O. C.'s in Montgomery County, Maryland and in California.

Training

Analysts were impressed by the amount and quality of tactical training within the fire services. Many volunteers participate regularly. Most full-time firemen participate in training every day. Fire services training officers appeared to be of the highest quality, with agressive programs.

The fire services are training their men to be firemen. In areas with hazardous natural fuels firemen need training in control tactics for timber, brush, and grass fires.

In only one area, is there joint training between services. This is a must for easier transition to disaster management.

None of the areas train in shelter protection from fire nor in evacuation protection.

The uniformly expressed need is for command training; how to expand to manage the large emergency and the disaster situations.

The fire services are looking to the Extension Service, and to the CD Agency for more leadership in command training.

General

There is an expressed need for legislation in two categories. (1) Enabling acts are needed to clarify liability of fire services when giving aid outside their jurisdictions. Inter-state pacts must be examined by the U. S. Congress. (2) Local governments have been unable to cope with restricting residential development in high hazard areas of natural fuels.

CONCLUSIONS

1. Realistic training of key fire service personnel at the local level is necessary before they will support the type of pre-emergency arrangements necessary to cope with nuclear attack.
2. People who will face the problem together should train together, that is, fire services, police, health, CD coordinators, and others.
3. The Civil Defense Act identifies the chain of strategic command for surmounting disasters; President of the United States to the governor, to the local subldivisions.
4. There exists a problem of deciding tactical fire command. Who is in charge, under what conditions, and how does he get in charge?
5. A nuclear disaster problem area might cover several jurisdictional areas. The commander of such a disaster should be a strategic commander assigned to a specific problem area. He must be capable of assessing the disaster situation and deciding how the several services--fire, police, health, transportation, and other are to be committed.
6. Selection of the strategic commander is a job for the governor of the state. OCD can help the state governors execute this responsibility by preparing job qualification standards and job descriptions for these commanders.

7. The almost universal practice of fire chiefs assuming command of all emergencies in his jurisdiction is logical and operable. This is the tactical fire command. This practice assures continuance of the fire services' present strong capabilities to take initial action in the absence of communication from higher authority.

8. Arranging fire service mutual aid on the basis of the worst fire emergencies likely to be experienced under normal conditions seems logical. Such arrangements should be the responsibility of the fire services and their local government bodies. Local CD coordinators should help arrange this. These arrangements should be activated from the bottom up. The request for aid originates with the unit fighting the fire and goes through the channels the pre-emergency plan may prescribe until the request is filled.

9. Qualified liaison from each involved public service agency should be present on each problem area's commander staff. His decisions then would be group decisions, involving all of the services.

10. Some state Civil Defense fire plans are drafted without involving the fire services. One reason for the fire service isolation is that they lack effective professional staff leadership at the local, state and national level. This situation might be improved by creating a staff chain of communication and service from the local level to the national level.

11. We can be quite certain that communication chaos will reign for a time following nuclear attack.

12. The universal communications problem suggests a special study.

13. The most effective fire services do the best job of pre-emergency planning and prevention.

14. None of the pre-emergency plans contained all the elements necessary for a fully effective plan.

15. There are several common elements that should be in all pre-emergency plans. The National Fire Coordination Study might pursue this problem and identify those elements.

16. Most dispatch and locator systems are inadequate. This suggests a special development project beyond the scope of the National Fire Coordination Study. Mobile, portable, or expandable units should be considered.

17. Pre-emergency plans should include ignition point reduction, zoning, and construction planning for fire prevention; and treatment of rural fuels where they are adjacent to urban areas.

18. Guidance is needed in determining the equipment needs and in the procurement of equipment.

19. Man-power and equipment are not always in balance. Many volunteer companies are not able to fully man the equipment now on hand.

20. Emergency operating centers must be protected from blast fallout and fire and must be in daily round-the-clock use by the fire service and police for normal operations. Thus, staffed with skilled dispatchers they can be readily expanded for disaster conditions.

21. Fire services are providing excellent tactical training for firemen.

22. There should be more joint training between services. It should include training in shelter protection and evacuation; and in hazardous natural fuels where they are present.

23. Command training at the local, state and national level is a high priority training need.

24. Legislation is needed in two fields: (1) To clarify liability when giving outside aid, and (2) to cope with restrictions of residential developments.

RECOMMENDATIONS

1. Provide sample Pre-emergency (Administrative) Plans to guide states and other levels of government. Include essential elements additional to those now required.

   Provide staff service as needed to help prepare plans. Do the same for Operational Plans or combine with Administrative Plan. (See Fed. C. D. Guide, Part F, Chap. 5, App-2, Sec. 2, Page 7.)

2. Involve those services in pre-emergency Planning who will implement the plans.

3. Identify the elements that should be common to all fire pre-emergency plans.

4. Encourage fire services to centralize operations, for improved cost-effectiveness. Attempt to retain the strength of locally autonomous departments. Montgomery County, Maryland, might serve as a pattern. Encouragement might take the form of (A) local studies, (B) assistance in preparing operations plans, and (C) matching funds for emergency operations centers that are manned and used daily by the fire service.

5. Encourage State legislation to permit Mutual Aid and Centralized fire operations on the broadest optimum geographical area. Sample pre-emergency plans will be a good way to do this.

6. Provide assistance to the fire services in replacing numerous 2-party Mutual Aid Agreements with uniform milti-party pacts to reduce the number of documents. Assistance can include legal advice and staff assistance in preparation of agreements.

7. Consider possibilities in clarification of liability laws and reimbursement procedures on mutual aid.

8. Review the role and clarify the duties of Civil Defense Directors at all levels, state to local.

   Clarify fire command versus coordinating support duties of C. D. Directors at all levels. Expand on Federal C. D. Guide, Part F, Chapter 5, Appendix 2, Section 5, Paragraph e - classification plan, to standardize: (1) description of duties (2) responsibilities (3) minimum training (4) experience (5) other qualifications.

9. Prepare job descriptions and qualification standards for Disaster Commanders.

10. Encourage the fire services to strengthen their effectiveness by increasing the proportion of paid firemen, particularly chiefs; while upgrading the job qualification standards.

    Such encouragement could take the form of: (A) exposure of chiefs and local government officials to command training, (B) supplying suggested job qualification standards for fire chiefs.

11. The inter-actions and relationships between Civil Defense officers and the fire services that relate to effectiveness, needs further study before definite recommendations can be made. At this time it is concluded that there are several possibilities, such as:

A. Create a Professional fire staff chain of communication and service - local to national level. First steps are:

(1) Describe the charter of this staff.

(2) Decide where it should be situated at the National Level. In OCD? In another government agency? An Inter-fire service NATO group?

B. Overhaul and strengthen the present Civil Defense organization as to method of selection of personnel, authority, job descriptions, etc.

C. Increase assistance to fire services to prepare and organize themselves for command in emergencies, while limiting Civil Defense functions to coordination and support.

12. Develop training materials - include realistic local attack patterns and possible simulation - and train Key Fire Service personnel to cope with nuclear attack fires.

13. Identify nuclear-disaster problem areas, i.e. Target areas. Then train the people together who must face the problem together.

14. Develop training materials, identify candidates, and train a group of disaster commanders in each state. Pick the most capable men available. Identify nuclear disaster problem areas from the National Fire Coordination Study Attack Model. Train a commander, an alternate and reserve for each problem area.

5. Encourage of require joint training participation of C. D. Directors for fire, with Fire Services staff, to accomplish objectives such as:

   A. Smooth transition of command from "normal" to disaster operation.

   B. Eliminate misunderstandings.

   C. Obtain effective management of fire disasters.

16. Provide assistance to the fire services in up-grading the levels of training to develop a reserve of command-trained officers. Consider coordination and support of training through state extension services.

17. Emergency operating centers should meet the following requirements:

   A. Protected from blast, fallout, and fire.

   B. Contain the best equipment available for dispatch and communications.

   C. Have a cadre of trained operators.

   D. Be in daily around-the-clock use by the fire services for "normal" operations.

   E. Be able to expand to handle disaster conditions.

18. Consider development projects for resource locator, inventory, data display and dispatch system capable of handling command of disaster conditions, for:

A. Hardened permanent system.

B. Portable or mobile system.

Identify the most successful systems now in use such as New York City, Montgomery Co., Maryland, and Los Angeles County.

19. Consider a development project to study needs and develop communications operating procedures and hardware for fire emergency conditions.

20. Encourage the acceleration of research in fire hazard reduction to include: Plant conversion, fuel treatments, shelter protecion building design, and community planning.

21. Develop national guide lines for fire and safe community planning. Consider a study to determine the need for a national building code, aimed at reducing the spread of mass fires. Start with the evaluation of present codes and enforcement problems. The control of development in high-hazard areas, structure design, and the spacing and arrangement of structures should be studied. Cost-effectiveness should be analyzed (estimated).

22. Consider the need for specifications and testing facilities for fire-fighting equipment to aid fire services in purchases. Include cost-effectiveness studies.

23. Attempt clarification of authorized use of C. D. equipment. (See Fed. C. D. Guide, Part F, Chapter 5, Appendix, Paragraph 1.4) Attempt uniformity in interpretation of Asst. Secretary's order.

24. Attempt uniformity in interpretation of regulations governing distribution of surplus property. Work toward helping units in need to qualify and obtain surplus property. (See Fed. C. D. Guide, Part F, Chapter 5, Appendix 3. Also Part 222, pages 8-11.)

APPENDIX

EXHIBIT A	Recommendations About Organization, Coordination, Mutual Aid and Command
EXHIBIT B	Recommendations About Communications
EXHIBIT C	Recommendations About Pre-Emergency Fire Suppression Planning and Prevention
EXHIBIT D	Recommendations About Fire Equipment and Tactics
EXHIBIT E	Recommendations About Protection of Command and Communication Centers
EXHIBIT F	Recommendations About Training
EXHIBIT G	General Recommendations
EXHIBIT H	Conclusions from the Five Studies
EXHIBIT I	Sources of Recommendation (Source Code Letters)

EXHIBIT A

Recommendations About Organization, Coordination, Mutual Aid and Command

Source Code

D Join the Civil Defense and fire services more closely by:

Appointing fire services personnel as CD directors

Share in pre-emergency planning

Share in the preparation of mutual aid pacts

Share in command and coordination training

C That a permanent urban fire organization be developed to span from the county level to the state level organization, staffed by fire service personnel.

C That an intermediate permanent fire organization (area) staffed by fire officers be created to embrace groups of counties where needed. It handles normal dispatching and could be readily expandable for emergency fire operations.

C That these organizations (1) and (2) above, (a) create and implement a state fire disaster plan (natural and nuclear) permitting amalgamation and coordination of all fire services in the state, (b) plan for and dispatch effective inter-state mutual aid requests, and

(c) insure a smooth transition from normal day-to-day operations to vastly expanded fires or sudden disaster.

C That the state and area fire organization suggested above be granted powers to activate and implement fire disaster plans.

C That the state and area fire organization suggested above be granted the power to supercede municipal authority during major fire disasters with certain limitations.

D If Civil Defense starts a program at national or state level and then drops it, they should let those people and organizations who are involved in the program know it has been dropped. Interested people do not like to be left hanging.

C That some form of additional remuneration be provided to the local director to a point whereby effectiveness and responsibility can be demanded, (perhaps 50% Federal, 25% state, and 25% municipal).

C That the proposed state fire organization be integrated into or have integrated in it the state forest fire service.

C That the role of the state Civil Defense organization be that of administrating and implementing Federal programs and organization of disaster related groups and services which do not normally exist.

C That the role of Civil Defense during fire emergencies be that of a support group to assist the fire services in staff functions such as coordination of supplies, manpower, and equipment procurement; supervision of matching fund regulations.

C That the responsibility of the local Civil Defense director within those communities which cannot pay a full-time director, be vested in either the fire or police department, (the only 24 hour emergency groups found in most municipalities).

B Local and county Civil Defense organizations need to develop positive communication channels with the fire service.

B Civil Defense directors should be better screened by local and county governments and oriented to what their role is and what their relationship with the operational departments of government are.

B Efforts should be made to stress the importance of a good Civil Defense director for effective and economical operations of emergency services. He should not be regarded simply as a man who plans for disasters.

C That the role of the local director be clarified to all municipal groups and that suitable job task descriptions be afforded to the appointed director.

C That the state and local Civil Defense agency be staffed by competent personnel through the creation of adequate qualification guides and job descriptions.

E Consider a study to develop the method for control of residential development in high-hazard foothills areas. The probable steps are education, restrictive legislation, and enforcement.

E Seek reform and clarification of liability laws as applying to firemen on mutual aid missions.

E Continue to liberalize policy on reimbursement, to encourage more effective mutual aid.

D Examine the role of the volunteer fire services. Are they able to provide the continuous professional leadership needed to cope with conflagrations that might extend from nuclear war?

C That the suggested state and area fire organization be staffed through competitive examination within the ranks of existing fire officers.

E Accept the existing mutual aid system, and exert major effort at strengthening it.

E Simplify and make legally acceptable, the many individual Mutual Aid Agreements, into a few joint pacts. (A local committee has started this task)

D In Montgomery County a mutual aid arrangement progress to the point that jurisdictional boundaries have been abolished and county-wide dispatching is practiced. All concerned are satisfied.

B Inter-state pacts

Investigate legislative changes needed so formal mutual aid can be brought about for day-to-day requirements, as well as for the declared emergency.

Investigate international arrangements which might bring about the same as above.

D The Tri-State mutual aid agreement in Maryland, north central Virginia, and the District of Columbia, was learned about too late for inclusion in this study. Inasmuch as interstate pacts must be reviewed by the United States Congress, this pact might well serve as a pattern.

B Mutual Aid Systems

A training and education program from state level with the following objectives:

Understanding of the requirements of mutual aid systems whether they be formal or informal.

Importance of resource inventories and plans.

Training to test and improve what plans are present.

In consultation with operational fire chief; possibly develop a master mutual aid program with sound guidelines and procedures for cities, counties, and areas to follow. The above should be stressed as plans for the declared emergency. (See last paragraph of Common Law Basis of Emergency Response)

E A more intensive study of mutual aid arrangements in the Los Angeles area is needed. It can be a partial pattern for other areas.

A Clarify the command arrangements for mass fire emergencies.

E Strengthen the pre-emergency command arrangements to improve operations during major fires.

D Build mutual aid and command arrangements around normal jurisdictional boundaries; that is county, zone, state; Montgomery County is an example. Design a "move-up" plan for emergency use.

EXHIBIT B

RECOMMENDATIONS ABOUT COMMUNICATIONS

SOURCE CODE

E Consider a development or study project for a communications system to handle disaster conditions; both operating procedures and hardware.

D Although the communications system is good and appears adequate for normal emergency, it would become saturated at about three times the normal traffic load. A study of needs for a maximum situation may be needed.

B Communications Systems

Civil Defense should instigate a study that would lead to recommendations and action to improve the fire service communications capability in the state of Michigan. There must be, at the operational level, strict separation of fire department, police department, and public works radio frequencies. The Federal Communications Commission has learned this lesson and made provisions for such separation. In day-to-day operations, this lesson has been learned by every major city in the country. In major emergencies, a group of smaller communities needs the same communication

capability that the larger cities have found is a must for day-to-day activities. Civil Defense should not encourage or match funds on any communications system that integrates the police, fire, and public works frequencies at the operational level. To do so is short-sighted.

EXHIBIT C

RECOMMENDATIONS ABOUT PRE-EMERGENCY FIRE SUPPRESSION PLANNING AND PREVENTION

CODE	
A	Urge adoption of plans similar to the proposed disaster plan for Portland -- Multnomah County area.
E	Discard plans that are not used or not acceptable. Involve the action units in planning. Strive for standardization of pre-emergency planning.
D	Pre-emergency plans should assign command to the most competent fireman when a fire disaster occurs. Such a plan might include fire command qualification standards, pre-emergency training, and/or experience and qualification cards.
D	Plans should include suitable fuel-type maps.
D	Pre-emergency plans should include priority guidelines, key areas to protect, such as shelters, hospitals, and drinking water.
D	Pre-emergency plans should contain automatic assignments for fire services in the event communications are inoperative, and until command is established.
C	That the state civil defense agency relinquish their responsibility of drafting state fire plans, and that the authority be given to the proposed state fire agency.

C The measure of need for transition to emergency operations needs to be defined by levels.

B Inventory Locator. Develop uniform system for determining inventory. Determine what resources needs to be inventoried at various levels from local to state level. Develop a simple uniform locator system.

B The inventory of firefighting resources should be brought up-to-date.

D Emergency operating centers are successful when:

They are manned around the clock for normal fire and police work by skilled dispatchers.

They are capable of easy expansion for higher-level emergencies.

EXHIBIT D

RECOMMENDATIONS ABOUT EQUIPMENT AND TACTICS

SOURCE CODE

A	Reexamine distribution procedures for Government surplus equipment.
A	Provide information on the emergency transportation of water.
A	Provide cost-effectiveness data on fire equipment. Relate it to insurance rates. A study project may be indicated to develop specifications and testing procedures. A testing laboratory may be needed.

EXHIBIT E

RECOMMENDATIONS ABOUT PROTECTION OF COMMAND AND COMMUNICATION CENTERS

SOURCE CODE

D	Protect key command and dispatch centers from fallout and blast.
B	Every fire department within 75 miles of Detroit should have radiological instruments and trained operators.

EXHIBIT F

RECOMMENDATIONS ABOUT TRAINING

SOURCE CODE

B There needs to be an education and training program with the following objectives:

Appreciate and understand the need for formal central command on large scale or even small scale day-to-day operations.

Teach the requirements of such command.

D Training programs in each major fire unit, city, county, state, and district, should include realistic simulation of what the fire and damage situation would be like following a nuclear attack in their area.

C That the proposed organization create, possibly under the auspices of the state university, a fire service school for:

Fire officer training

Fire disaster preplanning

Standardization of fire training

Coordinating, scheduling, and implementing fire-related civil defense courses, e.g. radiation monitoring.

D Staff and command training to include training in the actual workings of mutual aid in command at all levels, should be conducted for fire managers. Several types of positions should be covered.

E Conduct joint training in mutual aid operations and command.

A Encourage training, jointly, in mass fire emergencies.

E Consider the expansion of leadership in training by the California Disaster Office, as to scope, subject matter, and joint effort.

B Especially Successful Mutual Aid and Command Arrangements

Find a way to transfer the mutual aid experience and know how, from this area to other areas in the state. A state-wide training program could work in this direction.

B Ideas

Use ideas for improvement of mutual aid and command systems from areas that have experienced major disasters.

C That the proposed fire service school develop satellite training groups throughout the state to train firemen.

B Training Systems

Additional staff and funds should be provided to the Civil Defense Firemanship Training Program at Ann Arbor. This additional staff and funding should be exclusively for Fire Service Leadership and Command Training.

EXHIBIT G

RECOMMENDATIONS - GENERAL

SOURCE CODE

A	Study unprotected areas and develop acceptable plan for protection.
A	Study the tax system for reform to provide a tax base in rural areas with small ownerships.
E	Reduce fire hazard in watershed areas. Accelerate research in type conversion (substitute less flammable plant species). Fuels breaks and fuel treatments.

EXHIBIT H

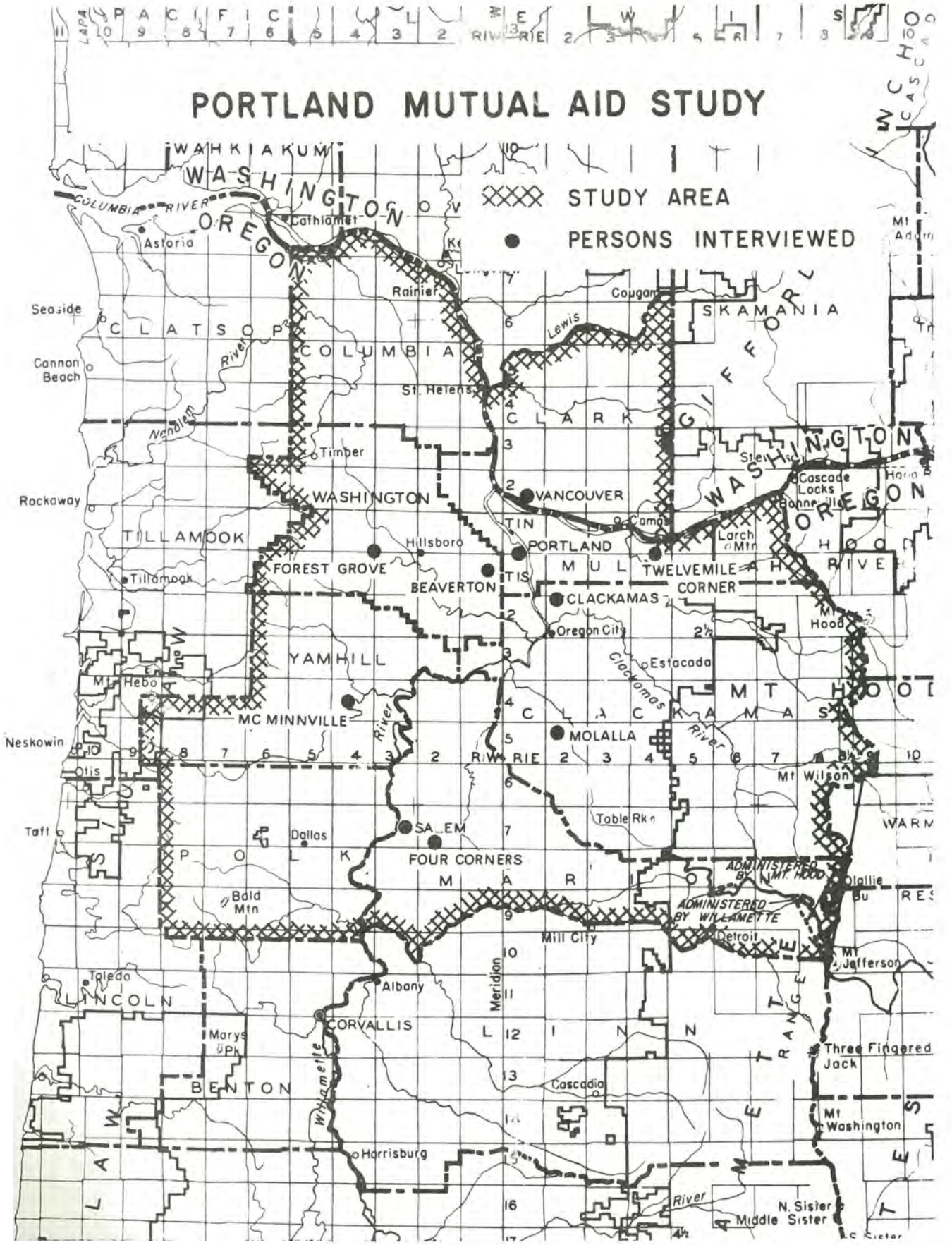
Conclusions from Portland Mutual Aid Study

Conclusions from Michigan Mutual Aid Study

Conclusions from Massachusetts Mutual Aid Study

Conclusions from Washington D. C. Mutual Aid Study

Conclusions from Los Angeles Mutual Aid Study


PORTLAND MUTUAL AID STUDY
STUDY AREA
PERSONS INTERVIEWED
WASHINGTON
OREGON
COLUMBIA RIVER
Cathlamet
Astoria
Seaside
Cannon Beach
Rockaway
Neskowin
Taft
Toledo
Rainier
Cougan
Lewis
River
Nehalem
Timber
St. Helens
Hillsboro
VANCOUVER
PORTLAND
FOREST GROVE
BEAVERTON
TWELVEMILE CORNER
CLACKAMAS
Oregon City
Camas
Cascade Locks
Bonneville
Larch Mtn
Estacada
Clackamas River
Mt Hood
Mt Wilson
Table Rk
Detroit
Mill City
Jefferson
Three Fingered Jack
Cascadia
Mt Washington
N. Sister
Middle Sister
Dallas
SALEM
FOUR CORNERS
Bald Mtn
Albany
CORVALLIS
Marys Pk
Harrisburg
Willamette River
Meridian
Base Line
Range
SKAMANIA
CLARK
CLATSOP
COLUMBIA
TILLAMOOK
YAMHILL
MC MINNVILLE
MOLALLA
POLK
MARION
BENTON
LINCOLN
LAWIS
ADMINISTERED BY MT. HOOD
ADMINISTERED BY WILLAMETTE

I. CONCLUSIONS

A. Written mutual aid agreements are considered a necessity by the city and county fire services in the Portland area.

B. Mutual aid agreements are in effect in different jurisdictional authorities as follows:

1. City and city--formal
2. Cities and Rural Fire Protection Districts--formal
3. County and county--formal (See Appendix, Exhibit 7, Mobile Support Plan)
4. RFPD and RFPD--informal
5. Vancouver, Washington, and RFPD's--informal

80% of the counties and cities outside of this Portland study area have mutual aid arrangements.

C. Actual mutual aid varies in degree when in operation. It depends on many factors such as availability of forces and degree of critical conditions at home.

D. The mobile support plan has not been used to date.

E. Delegation of command under the Mobile Support Plan is not clearly understood by participating personnel.

F. Fire companies respond to emergency calls from within Rural Fire Protection Districts or cities in the following order:

1. From within the endangered RFPD or city.
2. From RFPD's within the same county.
3. From RFPD's from adjoining counties.
4. From area counties designated by the Area Fire Chief.
5. From areas designated by the Governor through the State Fire Marshall.

G. This is the chain of command:

1. Fire Chief in the endangered area.
2. If two or more jurisdictions are involved, command would have to be determined.
3. Following a nuclear explosion, the Governor's Standard Operating Procedures covers delegation of command from the Governor.
4. The proposed Portland - Multnomah County Disaster Plan is a sample effort toward solution of the command assignment, but is not yet approved and adopted.

H. Organized fire protection is provided in all except a few areas within 20 miles of Portland. See Appendix, Exhibit 2 Map.

I. No evidence was found of fire protection oriented toward shelter protection.

J. Nearly all OCD-supplied equipment was located in two of the 60 rural districts.

K. Training is for the "usual" situation. Quality and kinds of training varies widely, for example:

1. McMinnville has outstanding test exercises, particularly in water-hauling with private trucks.
2. City departments drill on building fires and hose handling.
3. Joint training between fire services was not found.

L. Forty percent of the Rural Fire Protection Districts' personnel are totally volunteers. The other 60% have a nucleus of paid firemen. All cities have some paid firemen.

M. Communications are considered inadequate by all except the McMinnville chief.

N. The Proposed Portland - Multnomah Disaster Plan is excellent.

It has sections on police, engineering, fire, medical, Red Cross, communications, harbor facilities, and shelters.

Command is defined by positions at 2 levels of emergency.

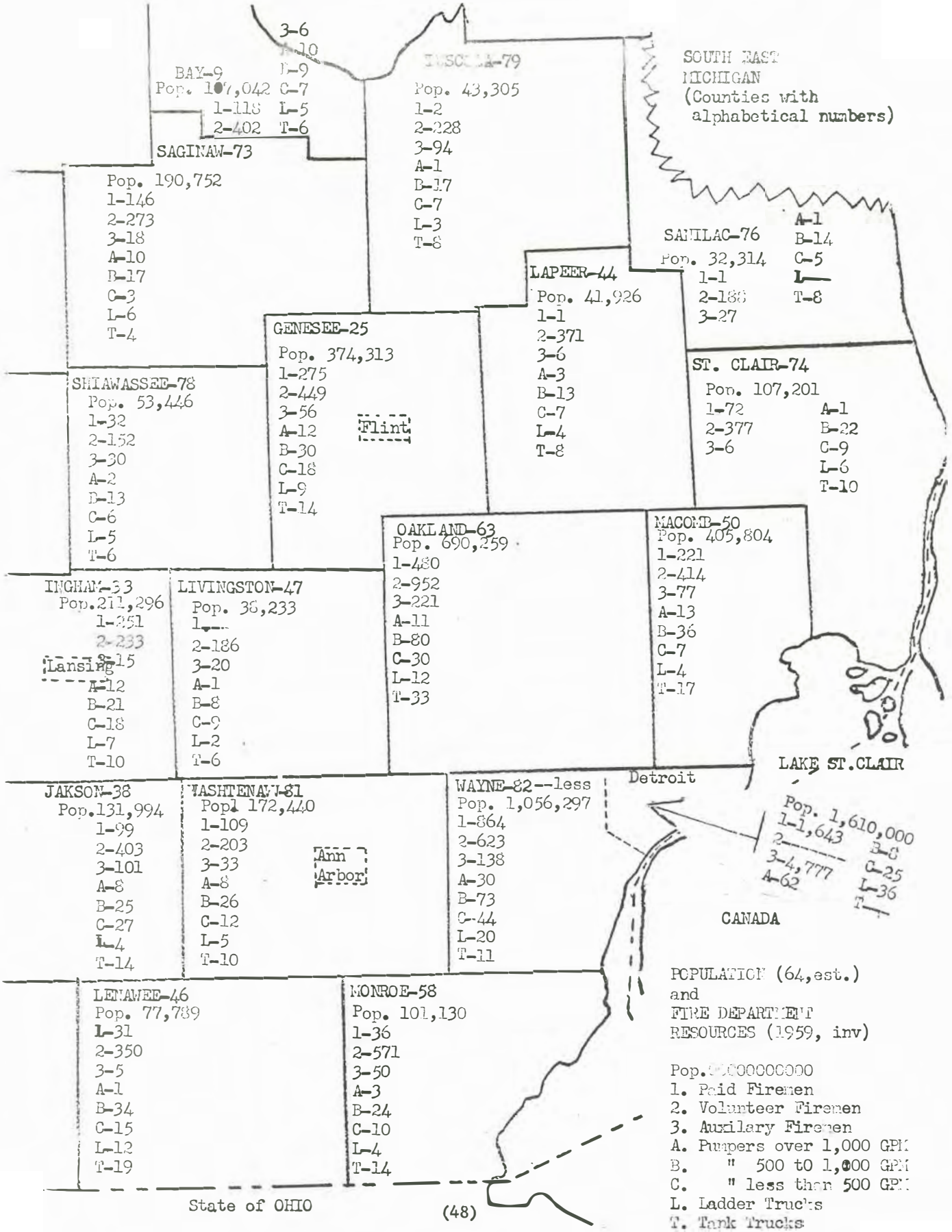
Communications are planned in detail with cost estimates of $78,772 for implementation.

Shelter management principles are outlined.

It contains the essential elements of what, who, and when in defining command.

O. These are opportunities for improvement in fire protection effectiveness:

1. Provide training in emergency transportation of water.
2. Distribute Government surplus fire equipment on the basis of need.
3. Select fire equipment for protection and insurance rate reduction.
4. Examine tax base on summer homes and small ownerships.
5. Examine areas without organized protection.
6. Clarify chain of command.
7. Encourage joint training of urban and rural services.


SOUTH EAST MICHIGAN
(Counties with alphabetical numbers)
BAY-9
Pop. 107,042
1-118
2-402
3-6
A-10
B-9
C-7
L-5
T-6
SAGINAW-73
Pop. 190,752
1-146
2-273
3-18
A-10
B-17
C-3
L-6
T-4
IOSCO-79
Pop. 43,305
1-2
2-228
3-94
A-1
B-17
C-7
L-3
T-8
SANILAC-76
Pop. 32,314
1-1
2-186
3-27
A-1
B-14
C-5
L-
T-8
LAPEER-44
Pop. 41,926
1-1
2-371
3-6
A-3
B-13
C-7
L-4
T-8
GENESEE-25
Pop. 374,313
1-275
2-449
3-56
A-12
B-30
C-18
L-9
T-14
Flint
SHIAWASSEE-78
Pop. 53,446
1-32
2-152
3-30
A-2
B-13
C-6
L-5
T-6
ST. CLAIR-74
Pop. 107,201
1-72
2-377
3-6
A-1
B-22
C-9
L-6
T-10
OAKLAND-63
Pop. 690,259
1-480
2-952
3-221
A-11
B-80
C-30
L-12
T-33
MACOMB-50
Pop. 405,804
1-221
2-414
3-77
A-13
B-36
C-7
L-4
T-17
INGHAM-33
Pop. 211,296
1-251
2-233
3-15
A-12
B-21
C-18
L-7
T-10
Lansing
LIVINGSTON-47
Pop. 36,233
1-
2-186
3-20
A-1
B-8
C-9
L-2
T-6
LAKE ST. CLAIR
Detroit
JAKSON-38
Pop. 131,994
1-99
2-403
3-101
A-8
B-25
C-27
L-4
T-14
WASHTENAW-81
Pop. 172,440
1-109
2-203
3-33
A-8
B-26
C-12
L-5
T-10
Ann Arbor
WAYNE-82--less
Pop. 1,056,297
1-864
2-623
3-138
A-30
B-73
C-44
L-20
T-11
Pop. 1,610,000
1-1,643
2-
3-4,777
A-62
B-8
C-25
L-36
T-
CANADA
LENAWEE-46
Pop. 77,789
1-31
2-350
3-5
A-1
B-34
C-15
L-12
T-19
MONROE-58
Pop. 101,130
1-36
2-571
3-50
A-3
B-24
C-10
L-4
T-14
State of OHIO
(48)
POPULATION (64,est.)
and
FIRE DEPARTMENT
RESOURCES (1959, inv)
Pop.
1. Paid Firemen
2. Volunteer Firemen
3. Auxilary Firemen
A. Pumpers over 1,000 GPM
B. " 500 to 1,000 GPM
C. " less than 500 GPM
L. Ladder Trucks
T. Tank Trucks

CONCLUSIONS

The existing mutual aid systems have no inter-system plan, nor organization and are therefore operationally limited to the size of emergencies which they have experienced.

Mutual aid has grown with the need.

Most fire services want help in developing better mutual aid arrangements.

Most Michigan fire services are well equipped and well manned.

The Conservation Department could give only limited help, except in wildland areas.

Command remains in the local jurisdiction.

Only one county is doing specific training in command post operations.

The state fire plan provides for command, at state, area, and local level in a declared emergency.

Command is placed in the state police, fire marshal division under state law number 154.

There is a feeling that the command arrangement at state level should be in a fire service rather than the state police.

When a city fire department gives aid to a small rural fire department, the rural chief is usually suspicious or he will want to turn his command over to the city chief.

There is no formal arrangement with Canada. Informal mutual aid with Canadian towns works well.

Only Monroe county has a locator system in operation at the communications center.

More than half of the fire service jurisdictions do not maintain current inventories.

Most fire departments do not realize the need for knowing what resources are available, except from their immediate neighbors.

Dispatchers do not always keep track of where equipment is sent.

Communications planning for fire radio frequencies has been poor. There are too many departments on a single frequency or frequency allocations are not widely enough separated.

There is no mutual aid frequency as such. The fire services expect to be able to use the Conservation Department or state police frequencies in time of emergencies. Lack of proper communications would seriously handicap mutual aid of the fire services.

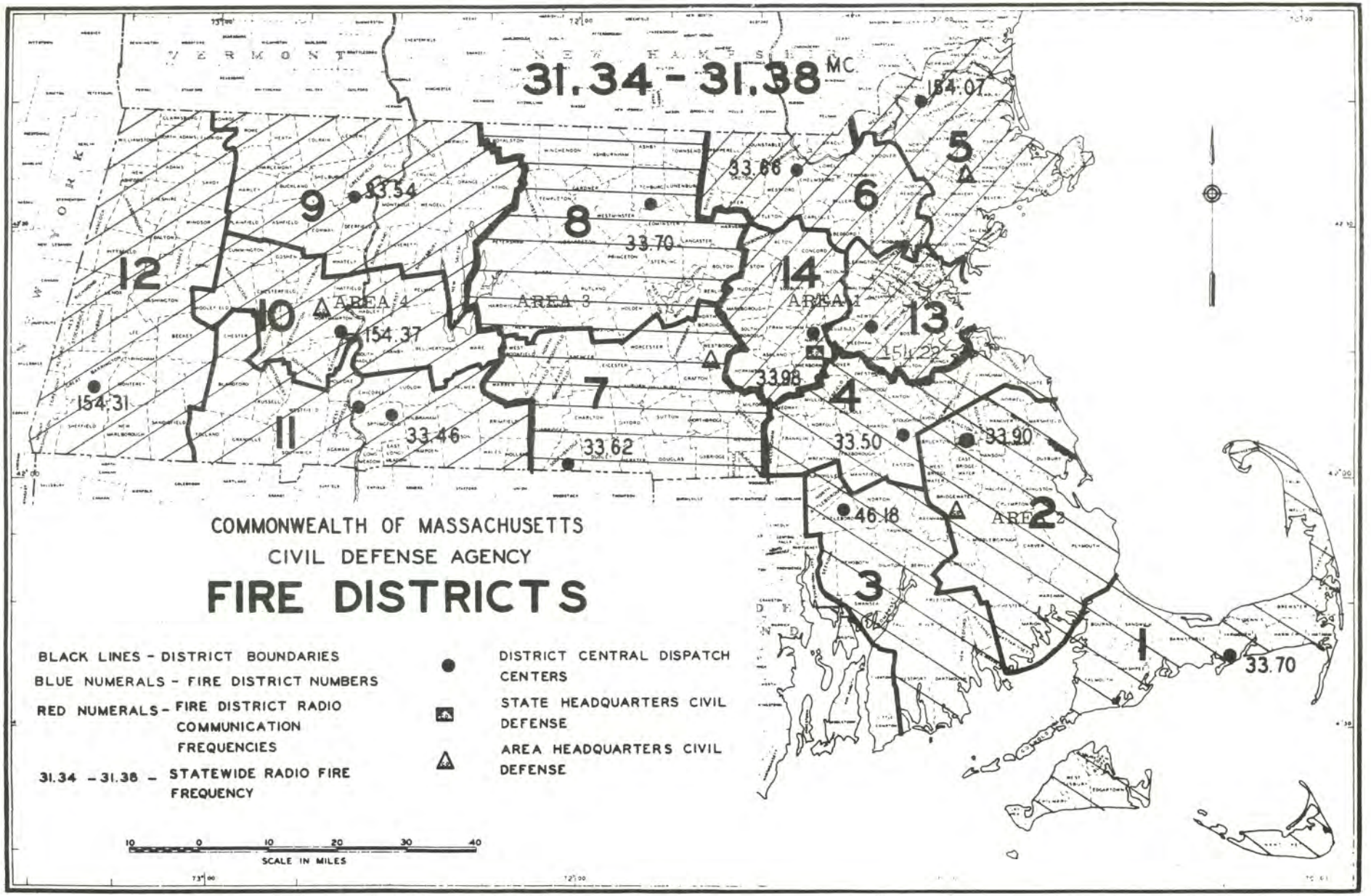
The quality and extent of organizing, planning, and Civil Defense programs at local and county level is entirely dependent on the local or county level of Civil Defense leadership. There are some good, some poor, and some non-existent.

Among the particularly good systems observed was the establishment and physical marking and utilization of the command post at a coordination size fire. This is one big step ahead of other mutual aid groups in the area.

Training appears to be at one level for the fire services, and at a different level and time for Civil Defense, state police, and state fire marshals.

The University of Michigan conducts classes in firemanship throughout Michigan and on the campus. Fire officers training is offered for one week on the campus.

The radiological monitoring capabilities within the fire services is very limited.


31.34 - 31.38 MC.
VERMONT
NEW HAMPSHIRE
154.07
33.66
5
6
9
33.54
8
33.70
14
12
AREA 4
AREA 3
AREA 1
13
10
154.37
154.22
33.98
154.31
7
4
11
33.46
33.62
33.50
33.90
46.18
AREA 2
3
1
33.70
COMMONWEALTH OF MASSACHUSETTS
CIVIL DEFENSE AGENCY
FIRE DISTRICTS
BLACK LINES - DISTRICT BOUNDARIES
BLUE NUMERALS - FIRE DISTRICT NUMBERS
RED NUMERALS - FIRE DISTRICT RADIO COMMUNICATION FREQUENCIES
31.34 - 31.38 - STATEWIDE RADIO FIRE FREQUENCY
DISTRICT CENTRAL DISPATCH CENTERS
STATE HEADQUARTERS CIVIL DEFENSE
AREA HEADQUARTERS CIVIL DEFENSE
10 0 10 20 30 40
SCALE IN MILES

CONCLUSIONS

1. Urban fire service organization generally ends at the county level.

2. Urban fire service command arrangements end at the local level.

3. Presently all fire chiefs are in command in their jurisdictions, regardless of level of emergency or amount of mutual aid.

4. Most fire chiefs consider that existing pacts and forces are adequate for any natural emergency.

5. The local mutual aid pact is the heart of all larger structures (pacts).

6. Most fire services consider the two most important aspects of mutual aid as:

    a. communication
    b. written agreements

7. All fire services contacted agree that the coordination of mutual aid during emergencies is dependent on communications.

    a. this appears to mean the allocation of one or more radio frequencies for mutual aid only, and adequate systems on their frequencies.

    b. it further appears that state coordinating level and local dispatch level communications are inadequate for multi-county mutual aid operations within their states (p. 149).

    c. state Forestry or Conservation Department communication nets, when present, may provide the best command and coordination link, when the entire fire emergency problem is consolidated (p. 152).

8. There is wide disparity (variation) between and within states in regard to:

    a. mutual aid agreements
    b. training programs
    c. communications
    d. pre-emergency planning (p. 132)

9. Factors (elements) common to successful mutual aid systems are: (p. 140)

   a. formal pacts that are approved by governing bodies.

   b. well prepared plans with broad scope beyond county boundaries.

   c. central (coordinate) dispatching for daily work.

   d. communications with several radio frequencies.

   e. paid, full-time dispatchers.

   f. modern dispatch system with operating data display and automatic recording.

   g. inventory of equipment, public and private, in addition to all fire apparatus (construction equipment, etc.)

   h. coordinated publicity arrangements.

   i. pre-emergency planning by all pact members.

10. Most fire chiefs lack training and experience in the management of large amounts of equipment and men.

11. There is a scarcity of officers trained in the direction of large fire emergencies.

12. Urban firemen lack training and experience in rural fires, and vice versa.

13. In the larger urban areas, there is no evidence of pre-emergency arrangements for supplementing water supplies.

14. The state civil defense fire plan exists on paper only, because there are no organized links between state civil defense and the local fire service.

15. State civil defense policies for fire appear to be drafted without understanding of fire service structure and operation at the local level.

16. Fire departments with paid personnel have time to develop an integrated plan of county, state and national scope. This plan could be made and maintained at no cost to the federal government. It would become the civil defense plan in time of national emergency (p. 123).

17. Fire services are critical of the large sums being spent by what they consider ineffective civil defense organizations (p. 124).

18. Fire chiefs almost without exception are capable, knowledgeable, dedicated, interested and anxious to improve the "system".

19. Firemen and civil defense personnel recognize deficiencies in their relationships and appear ready for help (p. 134).

20. All fire services believe in the need for fire staff and command schools (p. 134).

21. Most fire services are not aware of the limited authority and functions vested in the civil defense organizations.

22. Working relations, mutual support and actual coordination varies widely between:fire chiefs and civil defense directors at all levels (p. 125)

23. Acceptance and effectiveness would be enhanced if qualified fire service personnel were administering the state civil defense fire programs (p. 129).

24. Factors influencing working arrangements between fire services and civil defense include:

    a. personalities

    b. job qualifications of civil defense personnel

    c. assumption of command authority (definition of authority and responsibility).

    d. patronage appointments without qualifications

    e. civil defense directors with inadequate training for their assigned role.

25. Most fire service personnel disapprove of the political or patronage appointments of civil defense personnel. This causes them to be critical of the entire civil defense organization and program. There are two main points:

    a. unqualified persons appointed

    b. frequent change with change in political party.

26. Some local civil defense directors have been appointed only for the purpose of conforming with state laws or to meet the requirements for obtaining matching federal funds.

27. Some state civil defense agency directors are unclear as to the role of civil defense directors at various levels. There are no clear statements of authority and responsibility.

28. There is no evidence of the presence of job qualification guides and job descriptions for civil defense agency positions.

29. Communications and other equipment obtained with civil defense funds remain under the authority of local civil defense directors. Its use is at the discretion of the civil defense director.

30. Some present state civil defense plans go into effect only after declaration of a disaster by the Governor. The fire services are already involved, at that point in time. Therefore the state civil defense agency can be most effective in the expediting and coordinating functions to support the fire services. It is not logical for the civil defense agency to execute the command function (p. 147).

31. The civil defense agencies have some personnel capable of analysis, organization and planning. These individuals can become more effective in fire planning when given strong guidance and direction as to their relationship with the fire services.

32. The relinquishment of municipal authority or of fire service autonomy during a fire emergency is difficult. Both education and legislation are indicated (p. 146).

WASHINGTON, D.C. METROPOLITAN AREA
MUTUAL AID STUDY

Arlington Co., Va.
Fairfax Co., Va.
Montgomery Co., Md.
Prince Georges Co., Md.
City of Alexandria, Va.
Washington, D.C.

SCALE IN MILES

V. CONCLUSIONS

From this study it can be assumed and concluded that:

1. Civil Defense personnel in this area are capable and generally seem to understand their roles as coordinators rather than commanders. Individually and collectively they represent a tremendous store of talents needed to mold an effective Civil Defense for fire.
2. There is a hard core of capable professionals, full-time, career firemen throughout this metropolitan area.
3. The professional firemen in the area, generally expressed a feeling of urgency and need for better training in command and coordination, better pre-emergency planning, and for better mutual aid arrangements. Generally, they expect help from Civil Defense personnel.
4. Staff and command training is probably one of the weakest links in any large mutual aid situation.
5. Many volunteer companies have few if any paid firemen.
6. There is no evidence of pre-emergency attempts to organize and train the populace in controlling fires.
7. The practice of the fire chief retaining command within his jurisdiction during a mutual aid situation does not appear sound in all instances, particularly if he is a volunteer chief chosen by election.

8. It is difficult for many chiefs to imagine a fire situation with which they could not cope; nuclear disaster excepted.
9. Generally, the fire services are skillful and capable of coordinating efforts up to the level of emergencies they have experienced.
10. The elected volunteer chief probably is capable to command within his unit because of his personal popularity. As a non-professional with limited training, he is not likely to be skillful in the coordination and command of a mutual aid effort.
11. Autonomous fire services do not readily recognize nor accept command by someone other than their own choosing.
12. The Department autonomy that causes problems in planning in mutual aid coordination is one of the great strengths of the fire services.
13. The metropolitan area is irrevocably tied together. It would not be practical for any separate political body to maintain a force large enough to handle all fire emergencies. Therefore, mutual aid will continue to be a way of life.
14. A single, joint mutual aid pact for the six fire jurisdictions would be less cumbersome and less involved than are the many individual agreements.

15. There is considerable support for perpetuation of the volunteer fire service. It costs less in tax funds. It is the hub of community social functions. There is emotional involvement with tradition.

16. Pre-emergency planning would be more meaningful if the numbers of men from volunteer companies were known. The total fire forces in areas where volunteers are used looks good on paper, but generally only a small percentage can be counted on.

17. Civil Defense plans are not well-understood by those not working constantly with them.

18. There are several Government installations within the area that have firefighting capabilities, but it is generally felt they would not leave their areas to give aid to neighbors.

19. There is no evidence of effort to prepare urban fuel-type maps. There is only occasional identification of special hazards, such as shelters. Present complete reliance on the knowledge of dispatchers and chiefs could be disastrous if they were not available.

20. The zoning laws and building codes do not require construction of fallout shelters.

21. Only one dispatch office in everyday use is blast hardened. Most of the alternate dispatching centers are only fallout protected.

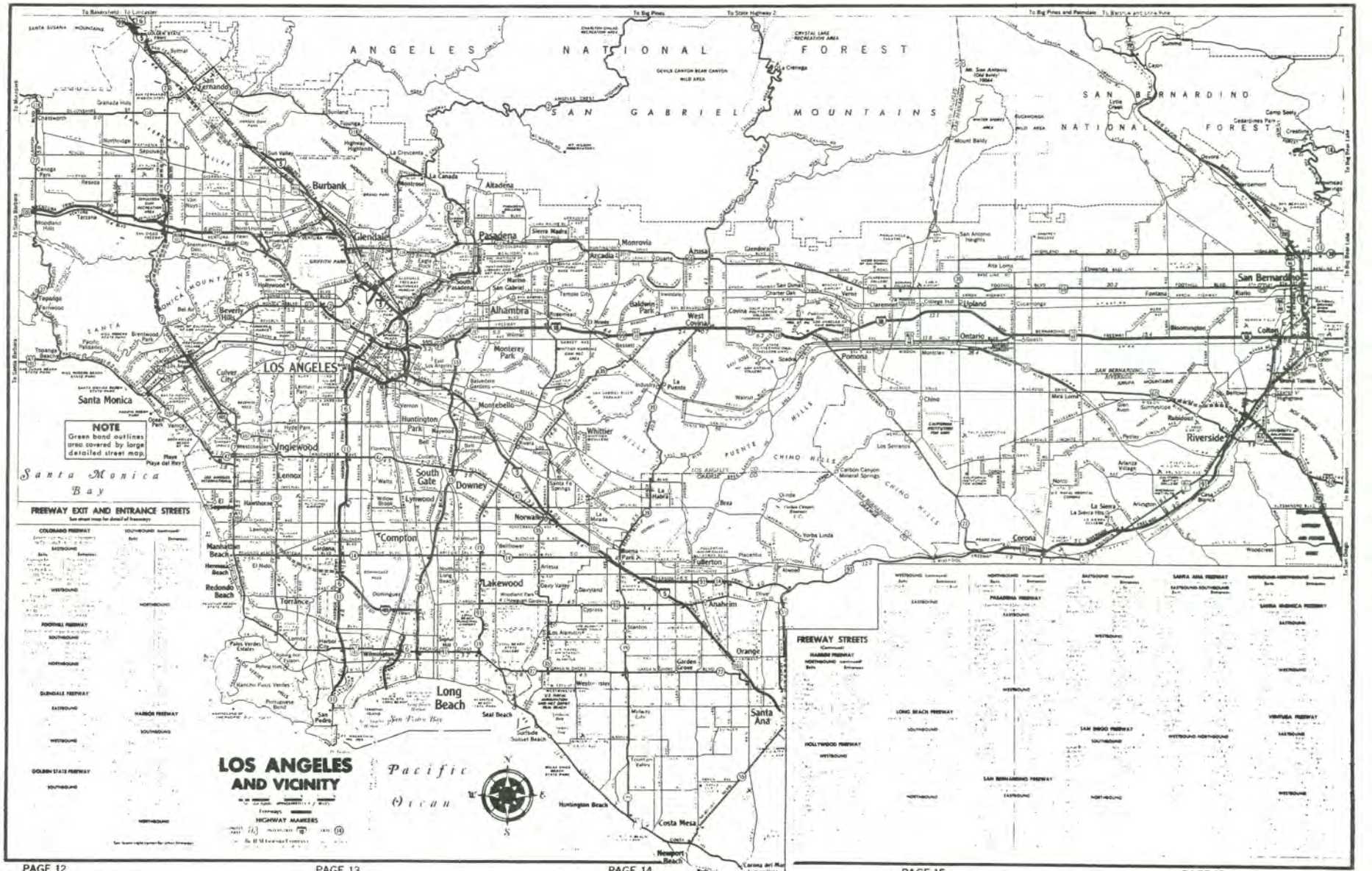
22. The Rockville Emergency Operating Center appears to have the pattern of success. Designed for daily operation, it is staffed with skilled dispatchers who can readily expand for severe emergencies.

23. Within Montgomery County the fire department jurisdictional boundaries have been dissolved for operational purposes. The County dispatcher calls the fire companies and they respond on the basis of pre-arranged proximity and availability. This arrangement exceeds mutual aid and becomes centralization.

24. The communications system with the new mutual aid frequency is generally considered adequate by fire personnel. Like other elements of preparedness, it is probably adequate for any emergency up to a level equal to emergencies experienced.

25. The Maryland Department of Forests and Parks is making effective use of citizens band radios to supplement regular radio communications for fire. The high incidence of instrument failure is apparently outweighed by the low cost and high portability.

26. There is only limited pre-emergency selection of assignments for firemen that would not depend on communications; such as protection of corridors and shelters.


ANGELES NATIONAL FOREST
SAN GABRIEL MOUNTAINS
SAN BERNARDINO NATIONAL FOREST
LOS ANGELES
Santa Monica
Burbank
Glendale
Pasadena
Alhambra
Monterey Park
Montebello
Whittier
Pomona
Ontario
Upland
San Bernardino
Riverside
Colton
Fontana
Rialto
Corona
Norwalk
Downey
South Gate
Compton
Lakewood
Long Beach
Santa Ana
Anaheim
Orange
Fullerton
Costa Mesa
Huntington Beach
Newport Beach
Torrance
Redondo Beach
Manhattan Beach
Inglewood
Culver City
Beverly Hills
Hollywood
Glendale
Burbank
Pasadena
Monrovia
Arcadia
Azusa
Covina
West Covina
Baldwin Park
Alhambra
Rosemead
San Gabriel
Temple City
La Puente
Industry
Walnut
Chino
Chino Hills
Puente Hills
Los Serranos
Yorba Linda
Placentia
Brea
La Habra
Whittier
Norwalk
Santa Fe Springs
Bellflower
Artesia
Cerritos
Los Alamitos
Seal Beach
Surfside
Sunset Beach
Huntington Beach
Westminster
Garden Grove
Mission Viejo
Lake Forest
Irvine
Tustin
Santa Ana
Orange
Anaheim
Fullerton
Placentia
Yorba Linda
Corona
Norco
Riverside
Arlington
Arlanza
Mira Loma
Jurupa Mountains
Rubidoux
Colton
Bloomington
Fontana
Rialto
San Bernardino
Highland
Redlands
Loma Linda
Grand Terrace
Colton
Ontario
Upland
Claremont
La Verne
San Dimas
Glendora
Azusa
Duarte
Monrovia
Arcadia
Sierra Madre
Altadena
La Canada
Montrose
La Crescenta
Tujunga
Sunland
Lake View Terrace
Pacoima
San Fernando
Mission Hills
Northridge
Chatsworth
Granada Hills
Sepulveda
Van Nuys
Sherman Oaks
Encino
Tarzana
Woodland Hills
Canoga Park
Reseda
Topanga
Malibu
Pacific Palisades
Brentwood Park
Culver City
Inglewood
Hawthorne
Lawndale
Gardena
Lomita
Torrance
Redondo Beach
Manhattan Beach
Hermosa Beach
El Nido
Wilmington
Harbor City
San Pedro
Palos Verdes Estates
Rancho Palos Verdes
Portuguese Bend
Long Beach
Signal Hill
Lakewood
Artesia
Cerritos
Norwalk
Whittier
La Habra
Fullerton
Placentia
Anaheim
Orange
Garden Grove
Westminster
Huntington Beach
Costa Mesa
Newport Beach
Irvine
Tustin
Santa Ana
Mission Viejo
Lake Forest
Corona del Mar
Balboa
Santa Monica Bay
Pacific Ocean
NOTE
Green band outlines area covered by large detailed street map.
FREEWAY EXIT AND ENTRANCE STREETS
See street map for detail of freeways
COLORADO FREEWAY
FOOTHILL FREEWAY
GLENDALE FREEWAY
GOLDEN STATE FREEWAY
HARBOR FREEWAY
FREEWAY STREETS
HARBOR FREEWAY
HOLLYWOOD FREEWAY
LONG BEACH FREEWAY
SAN DIEGO FREEWAY
SAN BERNARDINO FREEWAY
PASADENA FREEWAY
SANTA ANA FREEWAY
SANTA ANA-GARDEN GROVE FREEWAY
VENTURA FREEWAY
LOS ANGELES AND VICINITY
HIGHWAY MARKERS
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CONCLUSIONS

1. Mutual aid is a fact; has been in effect for many years; is not perfect; progress and improvement is being made.
2. Training is active, but mostly by local units and includes tactics and strategy; not command and coordination.
3. The area is ripe for institutional type training and for joint training and for a training director with all services financing same.
4. Command is good to date. Method of designating command is unknown for siutation worse than those experienced.
5. Communications are reasonably effective for general levels of emergency. Problems arise during large multiple fire situations.
6. Mutual aid agreements are used and recognized as necessary, but the fire services are not happy with them. The problems are primarily legal, financial, and definition of liability.
7. The construction of dwellings in high-hazard areas of the foothills is an increasingly complex problem. Local ordinances have not been able to control the situation through regimentation of people and zoning.
8. Natural fuels on watershed lands and adjacent to built-up areas are highly flammable and contribute to the fire problem.
9. The legal position and liability of fire services needs clarification. Currently a committee is studying this problem.

10. Fire services are familiar with the plans that are in use, but not with plans for extreme emergencies.

11. A liberal policy of reimbursement is essential to encourage automatic response and free exchange of mutual aid.

12. The present successful mutual aid arrangements are the result of need, adequate financing, and enabling legislation.

13. Civil Defense-owned pumpers and other equipment located at selected fire stations are used effectively to supplement regular fire equipment. Guidelines for use of CD equipment are well established.

14. In this area, relations between the fire services and the existing CD organizations are no problem. Through long practice and repeated testing, a good working arrangement has developed. Civil Defense people expedite and give support. Fire people direct the fire suppression forces.

15. The dispatching and locator system is among the most sophisticated. It can handle a large volume of business. It requires several trained operators.

EXHIBIT I

SOURCES OF RECOMMENDATIONS

(Source code letters)

A	Portland Mutual Aid Study
B	Michigan Mutual Aid Study
C	Massachusetts Mutual Aid Study
D	Washington, D. C. Mutual Aid Study
E	Los Angeles Mutual Aid Study